

WHAT IS CLAIMED IS:

1. A variable vane arm, comprising:
a mounting head having a back plate and first and second claws extending away from the mounting head defining a vane receiving area, the vane receiving area including first and second lateral slots and a surge slot; and
an actuation lever extending from the mounting head.
2. The variable vane arm of claim 1, wherein the vane receiving area is substantially cross-shaped.
3. The variable vane arm of claim 1, wherein the surge slot is flanked by the first and second lateral slots.
4. The variable vane arm of claim 1, wherein the mounting head and actuation lever are manufactured from titanium.
5. The variable vane arm of claim 1, wherein the back plate includes an aperture.
6. The variable vane arm of claim 1, wherein the surge slot is movable between first and second positions.
7. The variable vane arm of claim 6, wherein the surge slot is loosely disposed about the vane stem in the first position, and tightly grips the vane stem in the second position.

8. A variable vane arm assembly, comprising:

a vane arm having a mounting head and an actuation lever extending from the mounting head, the mounting head including a back plate from which first and second claws extend defining a vane receiving area, the vane receiving area including a surge slot flanked by first and second lateral slots; and

a vane connected to the vane arm, the vane having a vane stem, the first and second claws of the vane arm extending into first and second grooves in the vane stem, the vane stem terminating in a vane trunnion, the vane trunnion received in the surge slot of the vane arm.

9. The variable vane arm assembly of claim 8, further including a fastener connecting the vane arm to the vane.

10. The variable vane arm assembly of claim 8, wherein the fastener is a threaded bolt.

11. The variable vane arm assembly of claim 10, wherein the threaded fastener applies a predetermined preload to vane assembly.

12. The variable vane arm assembly of claim 8, wherein the vane arm is manufactured from titanium.

13. The variable vane arm assembly of claim 8, wherein the vane stem further includes first and second flats engaging the first and second claws of the vane arm.

14. The variable vane arm assembly of claim 8, wherein the surge slot is movable between a first position loosely disposed about the vane trunnion, and a second position tightly gripping the vane trunnion.

15. A gas turbine engine, comprising
- a compressor section;
 - a combustion section;
 - a turbine section; and
 - a plurality of variable vane arms mounted within the compressor section, each arm including a mounting head having a back plate and first and second claws extending away from the backplate defining a vane receiving area, the vane receiving area including first and second lateral slots and a surge slot, the variable vane arm further including an actuation lever extending from the mounting head.
16. The gas turbine engine of claim 15, wherein the vane receiving area is substantially cross-shaped.
17. The gas turbine engine of claim 15, wherein the surge slot is flanked by the first and second lateral slots.
18. The gas turbine engine of claim 15, wherein the mounting head and actuation lever are manufactured from titanium.
19. The gas turbine engine of claim 15, wherein the back plate includes an aperture.

20. A variable vane arm assembly, comprising:
a vane arm adapted to be secured to an actuator;
a vane mounted in the vane arm;
a first means for securing the vane to the vane arm;
a second means for securing the vane to the vane arm; and
means for ensuring the vane arm is able to drive the vane in the event one of
the first and second means for securing is inoperable.

21. The variable vane arm assembly of claim 17, wherein the first means
for securing is a claw.

22. The variable vane arm assembly of claim 17, wherein the second
means for securing is a bolt.

23. The variable vane arm assembly of claim 17, wherein the means for
ensuring is a surge slot provided within the vane arm.

24. The variable vane arm assembly of claim 23, wherein the surge slot is
movable between a first position loosely disposed around the vane trunnion and a second
position tightly gripping the vane trunnion.

25. A method of operating a variable vane assembly, comprising:
- gripping a vane to a vane arm using first and second claws which wrap around vane stem flats and into vane stem grooves;
- applying a preload to the vane and vane arm by attaching a threaded fastener therebetween; and
- rotating the vane about a longitudinal axis by rotating the vane arm, a surge slot of the vane arm being loosely disposed about a trunnion of the vane stem when rotating under normal conditions.
26. The method of operating a variable vane assembly of claim 25, wherein the vane arm rotates the vane even when the preload is lost.
27. The method of operating a variable vane assembly of claim 25, wherein the surge slot drivingly engages the trunnion of the vane stem when rotating under surge loads.